

## CHARGED PARTICLE SOURCE AND OPERATION THEREOF

### Abstract of the Disclosure

A charged particle source utilizes a novel plasma processing chamber, RF coil and ion optics, to achieve high uniformity. The plasma processing chamber has a re-entrant vessel which is movable, and which includes extensions of adjustable shape or position, to make more uniform the plasma contained within the chamber. One or more magnets, which may be static or moving, may be included within the re-entrant vessel. The ion optics include a grid with a number of apertures, and tuning features each surrounding an aperture. These tuning features either reduce the diameter of the associated aperture, or increase the length of that aperture, to create more uniform beamlets emerging from the grid. The RF coil includes a flux concentrator positioned adjacent to the winding in at least one angular region thereof to tune the magnetic field produced thereby.